# Notice No.4

## Rules and Regulations for the Classification of Naval Ships, January 2019

The status of this Rule set is amended as shown and is now to be read in conjunction with this and prior Notices. Any corrigenda included in the Notice are effective immediately.

Please note that corrigenda amends to paragraphs, Tables and Figures are not shown in their entirety.

## Issue date: June 2019

| Amendments to | Effective date | IACS/IMO implementation (if applicable) |
|---|---|---|
| Volume 1, Part 1, Chapter 2, Section 3 | Corrigendum | N/A |
| Volume 1, Part 3, Chapter 3, Section 2 | Corrigenda | N/A |
| Volume 1, Part 3, Chapter 5, Sections 6 & 10 | Corrigenda | N/A |
| Volume 1, Part 5, Chapter 2, Section 2 | Corrigenda | N/A |
| Volume 1, Part 5, Chapter 3, Section 1 | Corrigenda | N/A |
| Volume 1, Part 6, Chapter 2, Section 2 | Corrigendum | N/A |
| Volume 1, Part 6, Chapter 3, Section 2 | Corrigenda | N/A |
| Volume 1, Part 7, Chapter 3, Section 2 | Corrigendum | N/A |
| Volume 2, Part 1, Chapter 1, Section 8 | Corrigendum | N/A |
| Volume 2, Part 7, Chapter 4, Section 2 | Corrigendum | N/A |
| Volume 2, Part 9, Chapter 2, Section 4 | Corrigenda | N/A |
| Volume 2, Part 9, Chapter 6, Section 4 | Corrigenda | N/A |
| Volume 2, Part 9, Chapter 7, Section 4 | Corrigendum | N/A |
| Volume 2, Part 9, Chapter 12, Section 1 | Corrigendum | N/A |

Lloyd's Register

# Volume 1, Part 1, Chapter 2
# Classification Regulations

## ■ *Section 3*
## Character of Classification and Class notations

### 3.8 Military Distinction notations

**Table 2.3.1 Hull, Military and Other Class Notations**

| Other Notations |
|---|
| Others |
| ~~**ES**~~<br>~~Enhanced Scantlings~~ |

# Volume 1, Part 3, Chapter 3
# Ship Control Systems

## ■ *Section 2*
## Rudders

### 2.14 Cone couplings with key

**Table 3.2.11 Securing nut dimensions**

| Item | Requirement |
|---|---|
| Outer diameter | The greater of the following:<br>a. $d_n \geq 1{,}2$ ~~$d_i$~~ $d_u$, |
| ~~$d_i$~~ $d_u$ = inner diameter of securing nut, in mm | |

# Volume 1, Part 3, Chapter 5
# Anchoring, Mooring, Towing, Berthing, Launching, Recovering and Docking

## ■ *Section 6*
## Mooring arrangements

### 6.3 Mooring lines (Equipment Number > 2000)

6.3.2 The strength of mooring lines and the number of head, stern, and breast lines for ships with an Equipment Number > 2000 are based on the side-projected area $A_1$. Side projected area $A_1$ is to be calculated similar to the side-projected area $A$ according to *Vol 1, Pt 3, Ch 5, 2.1 Equipment Number calculation* but considering the following conditions:

(b) Wind shielding of the pier can be considered for the calculation of the side-projected area $A_1$ unless the ship is intended to be regularly moored to jetty type piers. ~~A height of the pier surface of 3 m above the waterline can be assumed, i.e. the lower part of the side projected area with a height of 3 m above the waterline for the considered loading condition can be disregarded for the calculation of the side-projected area $A_1$~~ The lower part of the side projected area above the waterline for the considered loading condition can be disregarded up to the pier height in the calculation of the side-projected area $A_1$. Actual height of the pier above the waterline is to be used in the calculation but in general not to exceed 3 m.

6.3.9 The total number of head, stern and breast lines specified as:

$n = 8{,}3 \times 10^{-4} \times A_1 + 6$

The total number of head, stern and breast lines is to be rounded to the nearest whole number. The number may be increased or decreased in conjunction with an adjustment to the strength of the lines. The adjusted strength, MBL*, is to be taken as:

~~MBL* = $\frac{n}{n^*}$~~ MBL* = MBL x $\frac{n}{n^*}$, for reduced number of lines

## ■ *Section 10*
## Anchoring equipment in deep and unsheltered water

### 10.3 Anchor windlass and chain stopper

*(Part only shown)*

**Table 5.10.1 Anchoring equipment for ships in unsheltered water with depth up to 120 m**

| Equipment Number $EN_1$ | | High holding power stockless bower anchors | | Stud link chain cable for bower anchors | | |
|---|---|---|---|---|---|---|
| | | | | | Min. diameter | |
| ~~Exceeding~~ Equal to or greater than | ~~Not exceeding~~ Less than | Number | Mass per anchor (kg) | Length (m) | Special quality (Grade U2) (mm) | Extra special quality (Grade U3) (mm) |
| 2530 | 2700 | 2 | ~~15900~~ 16300 | 990 | 105 | 84 |
| 2700 | 2870 | 2 | ~~15800~~ 16700 | 990 | 105 | 84 |
| 2870 | 3040 | 2 | ~~15700~~ 17000 | 990 | 105 | 84 |
| 3040 | 3210 | 2 | ~~15600~~ 17600 | 990 | 105 | 84 |
| 3210 | 3400 | 2 | ~~15500~~ 18000 | 990 | 105 | 84 |
| 3400 | 3600 | 2 | ~~15400~~ 18300 | 990 | ~~105~~ 106 | 84 |
| 3600 | 3800 | 2 | ~~16600~~ 19000 | 990 | 107 | ~~87~~ 85 |
| 3800 | 4000 | 2 | ~~17800~~ 19700 | 962,5 | ~~107~~ 108 | 87 |
| 4000 | 4200 | 2 | ~~18900~~ 20300 | 962,5 | 111 | 90 |
| 4200 | 4400 | 2 | ~~20100~~ 21100 | 962,5 | 114 | 92 |
| 4400 | 4600 | 2 | 22000 | 962,5 | 117 | 95 |
| 4600 | 4800 | 2 | ~~22400~~ 22900 | 962,5 | ~~120~~ 119 | 97 |
| 4800 | 5000 | 2 | 23500 | 962,5 | ~~124~~ 122 | 99 |
| 5000 | 5200 | 2 | 24000 | 935 | ~~127~~ 125 | 102 |
| 5200 | 5500 | 2 | 24500 | 907,5 | ~~132~~ 130 | ~~107~~ 105 |
| 5500 | 5800 | 2 | 25000 | 907,5 | ~~132~~ 133 | 107 |
| 5800 | 6100 | 2 | 25500 | 880 | 137 | 111 |
| 6100 | 6500 | 2 | ~~25500~~ 25700 | 880 | ~~142~~ 140 | ~~114~~ 113 |
| 6500 | 6900 | 2 | 26000 | 852,5 | ~~142~~ 143 | ~~117~~ 115 |
| 6900 | 7400 | 2 | 26500 | 852,5 | 147 | ~~117~~ 118 |
| 7400 | 7900 | 2 | 27000 | 825 | 152 | ~~122~~ 121 |
| 7900 | 8400 | 2 | ~~27000~~ 27500 | 825 | ~~–~~ 154 | ~~127~~ 123 |
| 8400 | 8900 | 2 | ~~27000~~ 28000 | 797,5 | ~~–~~ 158 | 127 |
| 8900 | 9400 | 2 | ~~27000~~ 28900 | 770 | ~~–~~ 162 | 132 |
| 9400 | 10000 | 2 | ~~27000~~ 29400 | 770 | – | ~~137~~ 135 |
| 10000 | 10700 | 2 | ~~27000~~ 29900 | 770 | – | ~~142~~ 139 |
| 10700 | 11500 | 2 | ~~27000~~ 30600 | 770 | – | ~~142~~ 143 |
| 11500 | 12400 | 2 | ~~29500~~ 31500 | 770 | – | 147 |
| 12400 | 13400 | 2 | ~~31500~~ 33200 | 770 | – | 152 |
| 13400 | 14600 | 2 | ~~34500~~ 35000 | 770 | – | 157 |
| 14600 | | 2 | 38000 | 770 | – | 162 |

# Volume 1, Part 5, Chapter 2

## ■ *Section 2*
## Wave environment

### 2.4 Service ~~Area~~ area factors

2.4.3 For unrestricted sea-going service, i.e. service area notation **SA1**, the service area factor is to be taken as 1,0**fsl.**

# Volume 1, Part 5, Chapter 3
# Local Design Loads

## ■ *Section 1*
## Introduction

### 1.3 Symbols and definitions

1.3.1 The symbols and definitions applicable to this Chapter are defined below or in the appropriate sub-Section. $L_{\text{WL}}$, $B$, $B_{\text{WL}}$, $D$, $T$ and $C_{\text{b}}$ are defined in *Vol 1, Pt 3, Ch 1, 5.2 Principal particulars*

$T_{\text{x}}$ = local draught measured from the underside of the keel to the design waterline at the longitudinal position under consideration ~~measured above the baseline is to be taken as the horizontal plane passing though the bottom of the moulded hull at midships,~~ *see Figure 3.1.2 Definition of symbols*

# Volume 1, Part 6, Chapter 2
# Design Tools

## ■ *Section 2*
## Structural design

### 2.2 Effective width of attached plating, $b_{\text{e}}$

2.2.4 The effective breadth of attached plating to primary support members (girders, transverses, webs, etc.), $b$-$_{\text{e}}$, is to be taken as:

~~$b_{\text{e}} = 300\text{S}\left(\frac{l}{s}\right)$*2[solm0]3*mm but is not to exceed 1000S~~

$b_{\text{c}} = 300S\left(\frac{l}{s}\right)^{2/3}$ mm but is not to exceed 1000$S$

# Volume 1, Part 6, Chapter 3
# Scantling Determination

## ■ *Section 2*
## Minimum structural requirements

### 2.2 Corrosion margin

**Table 3.2.1 Minimum structural requirements**

| Item | Minimum Scantling |
|---|---|
| Shell envelope | |
| Keel plate thickness, if fitted | ~~$\omega\sqrt{k_{ms}}1{,}35L^{0{,}45}{}_{1}$ mm~~ $\omega\sqrt{k_{\text{ms}}}1{,}35{L_1}^{0{,}45}$ mm |
| Bar keel area, if fitted | ~~$\omega k_{ms}L^{1{,}1}{}_{\text{R}}$ cm$^2$~~ $\omega k_{\text{ms}}{L_R}^{1{,}1}\text{cm}^2$ |

# Volume 1, Part 7, Chapter 3
# Total Load Assessment, TLA

## ■ *Section 2*
## Structural resistance

### 2.2 Stresses in plating

2.2.2 The bending stress in a plate panel between stiffeners due to a uniform lateral pressure is to be calculated as follows:

$$\cancel{\sigma_b = p \left(\frac{22{,}4_s \gamma\, \beta}{1000 t_p}\right) \text{N/mm2}} \qquad \sigma_b = p \left(\frac{22{,}4 s \gamma \beta}{1000 t_p}\right)^2 \text{N/mm}^2$$

# Volume 2, Part 1, Chapter 1
# General Requirements for Classification of Engineering Systems

## ■ *Section 8*
## Quality assurance scheme for machinery

### 8.2 Definitions

8.2.6 Sub-contractor
A company who contracts to deliver a service to a supplier or manufacturer under the agreed QAM Scheme arrangements.

# Volume 2, Part 7, Chapter 4
# Aircraft/Helicopter/Vehicle Fuel Piping and Arrangements

## ■ *Section 2*
## Refuelling facilities

### 2.1 Fuel storage

2.1.9 Tanks are to be provided with a level indicator that is fitted through the top of the tank and certified for installation in the appropriate hazardous zone. *See ~~Vol 2, Pt 10, Ch 1 Ergonomics~~ Vol 2, Pt 9, Ch 5, 4 Electrical equipment for use in explosive gas atmospheres or in the presence of combustible dusts.*

# Volume 2, Part 9, Chapter 2
# Electrical Power Generator and Energy Storage

## ■ *Section 4*
## Main source of electrical power

### 4.4 Prime mover governors

4.4.1 The governing accuracy of the generating sets prime movers is to meet the requirements of *Vol 2, Pt 2, Ch 1, 7.3 Auxiliary engine governors* and *Vol 2, Pt 2, Ch 1, 7.4 Additional requirements for auxiliary engine governors for naval vessels.*

4.4.2 The maximum electrical step load switched on or off is not to cause the frequency variation of the electrical supply to exceed the parameters given in ~~*Vol 2, Pt 9, Ch 1, 1.2 Application 1.2.1*~~ *Vol 2, Pt 9, Ch 1, 2.1 Quality of power supplies (QPS)*.

# Volume 2, Part 9, Chapter 6
# Lighting

## ■ *Section 4*
## Lighting systems

### 4.5 Navigation lights

4.5.5 For navigation lights using light emitting diodes (consisting of multiple light sources) means to ensure that the overall luminous intensity of the navigation light is sufficient are to be provided in addition to the alarm to indicate the complete loss of the navigation light illumination required by ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.4*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.4*. For replacement navigation lights, *see Vol 2, Pt 9, Ch 1, 1.7 Alterations and additions 1.7.7*.

4.5.6 To satisfy ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.5*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.5*, an audible and visual alarm is to be activated to notify the bridge Officer of the Watch when the luminous intensity of the light reduces below the level required by the IMO *Convention on the International Regulations for Preventing Collisions at Sea*. Alternative measures to ensure continuing acceptable performance of navigation lights using light emitting diodes may be considered that are in accordance with:

- IMO Res. MSC.253(83), *Performance Standards for Navigation Lights, Navigation Light Controllers and associated Equipment*, and
- EN 14744, *Inland navigation vessels and sea-going vessels – Navigation light*, or a relevant National, International or Naval Standard.

Where alternative measures are proposed that require verification by personnel of the luminous intensity of navigation lights using light emitting diodes, details of the periodic inspection implementation and acceptance by the Naval Administration are to be submitted for consideration.

4.5.7 Navigation light power supply units installed to convert, control and/or monitor the distribution board power supply required by ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.1*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.1* above for connection to the light source(s) (e.g. for LED type navigation lights) are, in the event of a short-circuit on the unit output, to disconnect or limit the supply to prevent further damage and activate an alarm.

4.5.8 Navigation light power supply units are to be self-monitoring, detecting failures of the unit itself and activating an alarm. These are to include:

- detection of system lock-ups (program hangs);
- means to detect failure of navigation light switching command input circuits or links; and
- means to detect failure of the navigation light monitoring arrangements required to provide the alarms required by ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.4*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.4* and ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.5*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.5*, as applicable.

4.5.9 The navigation light power supply failure alarms required by ~~*Vol 2, Pt 9, Ch 7, 4.7 Valve control and indication systems 4.7.1*~~ *Vol 2, Pt 9, Ch 6, 4.5 Navigation lights 4.5.1* are not to be displayed as a group alarm. Other navigation light alarms may be grouped for each navigation light where means are provided for personnel to determine the cause of the alarm. Activation of more than one of the navigation light alarms as a result of a single failure is to be prevented.

# Volume 2, Part 9, Chapter 7
# Control, Alerts and Safety Systems

## ■ *Section 4* Essential features for control, alarm and safety systems

### 4.5 Control systems, general requirements

4.5.7 Failure of a control system is not to result in the loss of ability to provide Mobility and/or Ship Type systems by alternative means. This may be achieved by manual control or redundancy within the control system or redundancy in machinery and equipment, *see also* ~~*Vol 2, Pt 9, Ch 8, 5.5 Additional requirements for integrated systems 5.5.2*~~ *Vol 2, Pt 9, Ch 8, 5.5 Additional requirements for integrated systems 5.5.4*. Instrumentation is to be provided at local manual control stations to ensure effective operation of the machinery by duty personnel.

# Volume 2, Part 9, Chapter 12
# Testing and Trials

## ■ *Section 1* Testing and trials

### 1.5 Optical Fibre Communications Systems

1.5.4 The results of the testing required by ~~Vol 2, Pt 9, Ch 12, 1.4 Partial discharge testing of high voltage rotating machines for ship type and mobility systems 1.4.4~~ *Vol 2, Part 9, Ch 12, 1.5 Optical Fibre Communications Systems 1.5.3* are to be validated against the communication system design specification to ensure that adequate optical power will be transmitted for correct system operation (see *Vol 2, Pt 9, Ch 1, 1.5 Documentation required for supporting evidence 1.5.8*).

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